

California Department of Fish and Game  
722 Capitol Avenue  
Sacramento, California

MARINE RESOURCES OPERATIONS  
Cruise Report 58S1-Pelagic Fish

Cruise: Cruise one of the N. B. SCOFIELD for 1958, 58S1-Pelagic Fish  
Sailed: February 12, 1958, from Los Angeles Harbor.  
Returned: February 28, 1958, to Los Angeles Harbor.

Locality: The coast of Baja California from Ensenada to Ballenas Bay from one-half to 30 miles offshore.

Purpose: To locate and sample spawning populations of sardines for age composition and subpopulation studies. This cruise was the first of its type and was exploratory in nature. To develop techniques and methods of effective sampling of spawning sardines.

Other objectives included:

1. Collection of live sardines for genetic subpopulation studies by the U. S. Fish and Wildlife Service.
2. Collecting blood serum from yellowtail and bonito to be used in genetic studies on sardines.
3. Experimentation with different colored lights for attracting fish.
4. Collection of specimens as requested by other departmental investigations.

Methods: Fishing

Fishing stations were made at night on visually located schools and in previously productive bays. Stations were also occupied where plankton tows yielded sardine eggs and larvae. A 1500 watt light was used for attracting the fish and a blanket net or snag gangs was used to sample them.

Fish Behavior and Gear Operation

Observations on the behavior of sardines and their reaction to types of gear were made as a basis for developing an effective sampling tool.

Colored Light Experiment

Limited experiments with colored lights were conducted. Green and blue lights were each used simultaneously with a standard 1500 watt white light. Observations were made on the degree of attraction and behavior of fish under each light. Colored lights were used both above and below water.

## Results:

### Fish Catch and Sightings

Fifty-five fishing stations were occupied and sardines were taken at 9, northern anchovies at 3, Pacific mackerel at 2, and jack mackerel at 2. All fish taken except 2 samples of anchovies were caught within 5 miles of shore. Most of the sardine samples were taken in Sebastian Viscaïno Bay.

In the 803 miles scouted on the cruise, 28 schools of pelagic fish were observed; 26 were identified as sardines and 2 were unidentified. Most of the sardine schools were sighted in the vicinity of Cedros Island and several at Soledad and Ballenas Bays. California gray whales were observed frequently during the cruise. The greatest numbers were observed near Scammon Lagoon and Asuncion Island.

### Sexual Maturity

No ripe running sardines were taken, but a large percent were in a gravid condition. The largest sardines taken were from Sebastian Viscaïno Bay. Plankton tows produced sardine eggs and larvae in 9 of 14 tows. Anchovy eggs were present in large numbers at several locations in Sebastian Viscaïno Bay.

### Fish Behavior

Although offshore plankton tows yielded sardine eggs and larvae, no fish were observed or caught. The larger sardines caught inshore were feeding vigorously on the surface and were captured easily with snag gangs and blanket net. The smaller fish stayed deep and could be caught only with much difficulty in the blanket net. Sardines were taken in 9 of 13 locations where sampling was attempted. Visually located schools either ignored the attracting light or remained at such a distance as to make capture improbable.

### Gear Observations

Offshore operations were greatly hampered with all types of gear available due to weather conditions. Blanket net sets offshore were made difficult because of roll and drift of the vessel.

### Colored Light Experiments

In the experiments conducted, the white light apparently was much superior in attracting fish. There was some evidence that the green light was slightly superior in attracting larval fish.

### Oceanographic Observations

Surface water temperatures ranged from 14.90° C at Cape Colnett to 20.00° C off Asuncion Bay. Bathythermograph casts indicated subsurface waters varying but little from surface temperatures to a depth of nearly 200 feet.

### Other Collections

Live sardines were collected from Playa Maria and Asuncion Bays for the U. S. Fish and Wildlife Service. Blood serum was collected from 4 yellowtail taken at Cedros Island. Samples of barracuda and black sea bass were taken for other investigations.

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N.B. SCOFIELD

CRUISE 58-S-1

FEB. 12 - FEB. 28, 1958

EACH MARK REPRESENTS  
ONE SAMPLE.

- SARDINES
- ▲ PACIFIC MACKEREL
- JACK MACKEREL
- X ANCHOVIES
- ROUTE

